

Pest Detection/CAPS Survey Work Plan - Fiscal Year 2023

Cooperator:	The Connecticut Agricultural Experiment Station	
State:	Connecticut	
Project:	Survey	
Project Funding Source:	Pest Detection/CAPS Survey	
Total Agreement Amount:	\$ 63,613	
Start Date:	May 1, 2023	
End Date:	April 30, 2024	
Project Coordinator:		Dana Crandall
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This Work Plan reflects a cooperative relationship between the Connecticut Agricultural Experiment Station (the Cooperator) and the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ). It outlines the mission-related goals, objectives, and anticipated accomplishments as well as the approach for conducting a Tree Nursery Pest Survey and the related roles and responsibilities of the parties [e.g., APHIS role(s) and Cooperator role(s)] as negotiated.

D) OBJECTIVES AND NEED FOR ASSISTANCE

What relevant need or problem within the cooperator's mission area requires a solution in carrying out a public purpose of support or stimulation authorized by a law of the United States? How does the need or problem align with the mission area and strategic goals of APHIS?

The nursery and greenhouse industry in Connecticut is the largest agricultural production sector in the state, accounting for 42% of agricultural product sales (Economic Impact of Connecticut's Agricultural Industry, UConn, 2015). According to the CT Nursery and Landscape Association, the industry grosses more than \$800 million annually. Many of these nurseries and greenhouses are adjacent to forested areas with softwoods, including pine, cedar, spruce, fir, being many of the common, popular

Christmas trees and landscape plants. This creates a high potential for exotic softwood pest introduction into adjacent neighborhoods having landscaped softwoods, and also the introduction of these pests into Connecticut nurseries. In 2019, Connecticut generated \$10 million in total sales of coniferous evergreens including pine, cedar, spruce, and fir. Specifically, wholesale of conifers generated \$9.6 million in total sales (USDA National Agricultural Statistics Service).

Exotic moths and beetles threaten Connecticut's nursery industry and forested areas.

Thaumetopoea pityocampa, the pine processionary moth is a destructive pine defoliator in Asia, northern Africa, and southern Europe. It poses a similar threat of northward expansion as its relative the oak processionary moth, including the possession of harmful stinging hairs.

Dendrolimus punctatus, the Masson pine moth is included due to its status as economically important defoliator of pine trees in Eurasia. Populations of this moth can build up over several years and reach outbreak conditions, causing widespread damage to pines.

Hylobius abietis, the large pine weevil, is a long lived insect pest of pine and spruce trees although it also feeds on several hardwood tree species. Adults of *H. abietis* can be an economically important pest of young conifer plantations since they like to feed on young saplings. Typically eggs are laid near root collar where hatched larvae tunnel under the bark.

Monochamus urussovi, the black fir sawyer, is native to regions of Asia and Europe where it causes significant damage primarily to fir, but also spruce and pine. Adult feeding generates bark peeling on host trees, as well as larval feeding that causes feeding galleries within the tree, eventually leading to premature death.

Monochamus alternatus, the Japanese pine sawyer, is of concern primarily for pine, as well as fir, cedar, and spruce. This pest is native to Japan, as well as China and Korea. Larval feeding generates feeding galleries internally; adult emergence leads to large exit holes in the bark. Additionally, this pest is a major vector for the pine wood nematode.

Tetropium castaneum, the black spruce beetle, can cause widespread defoliation especially when trees have been severely damaged and defoliated previously. Larval galleries can be visible as well as dying foliage and weakened structural integrity.

Tetropium fuscum, the brown spruce longhorned beetle, is distributed throughout Europe, northeastern Asia, China and Japan. Primary hosts include fir, larch, pine and spruce. Coniferous damage from *T. fuscum* involves heavy sap flow and progressive die-back of needles.

The purpose of these surveys is to determine if any of these invasive pests have been introduced to the state of Connecticut and whether Connecticut is free of these exotic pests. Demonstrating area freedom is an important phytosanitary measure that will allow the United States to continue to export at-risk stock from regions of the country that are determined to be free from these pests.

II) RESULTS OR BENEFITS EXPECTED

The Cooperator seeks to conduct a program which is expected to result in:

- A. Determining whether *Thaumetopoea pityocampa*, *Dendrolimus punctatus*, *Hylobius abietis*, *Monochamus urosovii*, *Monochamus alternatus*, *Tetropium castaneum*, and *Tetropium fuscum*, are present in Connecticut nurseries.
- B. Increase outreach and awareness to Connecticut stakeholders and industries about the pests of concern.
- C. Knowledge regarding the presence or absence of these pests will assist in decision making regarding management of these pests.

III) APPROACH

What is the plan of action or approach to the work?

Scientific Name	Common Name	Survey Method	Trap	Lure
<i>Thaumetopoea pityocampa</i>	Pine Processionary Moth	Trap	Plastic Delta Trap	<i>Thaumetopoea pityocampa</i> Lure
<i>Dendrolimus punctatus</i>	Masson Pine Moth	Trap	Wing Trap	<i>Dendrolimus punctatus</i> Lure
<i>Hylobius abietis</i>	Large Pine Weevil	Trap	Cross Vane Panel Trap, Black	Alpha Pinene UHR Lure, Ethanol Lure, Monochamol Lure
<i>Monochamus urusovi</i>	Black Fir Sawyer	Trap	Cross Vane Panel Trap, Black	Alpha Pinene UHR Lure, Ethanol Lure, Monochamol Lure
<i>Monochamus alternatus</i>	Japanese Pine Sawyer	Trap	Cross Vane Panel Trap, Black	Alpha Pinene UHR Lure, Ethanol Lure, Monochamol Lure
<i>Tetropium castaneum</i>	Black Spruce Beetle	Trap	Cross Vane Panel Trap, Black	Spruce Blend Lure, Geranyl Acetol Lure, Ethanol Lure
<i>Tetropium fuscum</i>	Brown Spruce Longhorned Beetle	Trap	Cross Vane Panel Trap, Black	Spruce Blend Lure, Geranyl Acetol Lure, Ethanol Lure

We will place traps baited with appropriate lures for *Thaumetopoea pityocampa*, Pine Processionary Moth, *Dendrolimus punctatus*, Masson Pine Moth, *Hylobius abietis*, Large Pine Weevil, *Monochamus urusovi*, Black Fir Sawyer, *Monochamus alternatus*, Japanese Pine Sawyer, *Tetropium castaneum*, Black Spruce Beetle, and *Tetropium fuscum*, Brown Spruce Longhorned Beetle at thirty-five high-risk sites in Connecticut. High-risk sites include nurseries (wholesale, retail, and growing yards) that sell, grow, cut, or contain softwoods, such as pine, spruce, and fir. Traps will be installed starting in June and serviced biweekly according to the CAPS Approved methods and National Survey Guidelines. The survey will continue into September.

The CAPS State Survey Coordinator (SSC) and assistant will conduct surveys, sort moth trap samples and send the samples containing suspect moths to the Oregon Department of Agriculture Insect Pest Prevention and Management (IPPM) Lab for identification and screening (six visits, 420 potential samples).

The CAPS State Survey Coordinator (SSC) and assistant will conduct surveys, sort beetle trap samples and send the samples containing suspect beetles to the Carnegie Museum of Natural History in Pittsburgh, PA for identification and screening (six visits, 420 potential samples).

A. The Cooperator Will:

1. By function, what work is to be accomplished?

- a. Cooperator will conduct moth and beetle trapping surveys from June to September.
- b. Cooperator will also conduct outreach to the nursery growers and other stakeholders at their annual meetings and as survey sites are arranged with them. Nursery employees will be educated about pest management so as to minimize any possible negative impact on their business.

2. What is the quantitative projection of accomplishments to be achieved?

- a. *By activity or function, what are the anticipated accomplishments by month, quarter, or other specified intervals?*
 - Data management and reporting will occur throughout the survey season into an approved APHIS database from June to December, after taxonomic evaluations.
 - Pest risk and pathway analysis will be used to select survey sites in nurseries and other high-risk areas containing prominent target pest hosts during January through May.
 - Surveys will be undertaken when pest symptoms are expressed and/or adult stages are flying: Pine Processionary Moth, Masson Pine Moth, Large Pine Weevil, Black Fir Sawyer, Japanese Pine Sawyer, Black Spruce Beetle, and Brown Spruce Longhorned Beetle- June to September. Black cross vane panel traps, paper wing traps, and large plastic delta traps will be checked every two weeks as per survey guidelines.
 - Samples will be sent to appropriate identifiers throughout the survey period from June to September and completed as needed in the fall.
 - Cooperator outreach and risk communication will occur throughout the season at survey locations and at grower meetings.
 - Work plans, survey results, and pest information will be submitted to the CAES webmaster on an ongoing basis throughout the year. A semi-annual report will be submitted in December 2023, and an annual report will be submitted in August 2024.
- b. *What criteria will be used to evaluate the project? What are the anticipated results and successes?*

- Pest detection surveys and outreach are completed in the manner and time frame outlined in Section III.A.1 above.
- All data collected from the pest detection surveys will be entered into APHIS PPQ approved database (NAPIS) as outlined in Section V below.
- PPQ site visits conducted at least once a year of planned survey activities.

3. What numbers and types of personnel will be needed and what will they be doing?

- One seasonal worker will be trained to run trap surveys, in sorting and sending samples for identification, and to recognize symptoms of infestation of exotic moths and beetles. The worker will be supervised by the State Survey Coordinator (SSC) and will assist with trap installment and insect collection. The seasonal worker will be hired for the summer of 2023. All positions will be paid positions.
- Dana Crandall, the SSC, will coordinate the surveys, ensuring all necessary supplies are obtained and the objectives are met. She will also assist in survey, sorting, and outreach activities.

4. What equipment will be needed to perform the work?

a. What equipment will be provided by the cooperator?

Cooperator will provide large format printers and state vehicle.

b. What equipment will be requested from APHIS on loan?

None.

c. What equipment will be purchased in whole or in part with APHIS funds?

None.

d. How will the equipment be used?

Large format printers will be used for producing outreach materials; state vehicle will be used to conduct survey and for travel to meeting and outreach events.

e. What is the proposed method of disposition of the equipment upon termination of the agreement/project?

N/A

5. Identify information technology equipment, e.g., computers, and their ancillary components.

IT equipment currently used by SSC:

- Tablet – purchased with APHIS funds from previous agreement.
- LCD Projector – purchased with APHIS funds from previous agreement.
- GPS Unit – purchased with APHIS funds from previous agreement.

IT equipment currently used by all personnel:

- Access to CAES computers, access to Internet through CAES and CAES computer network.

6. What supplies will be needed to perform the work?

- a. *What supplies will be provided by the Cooperator?*
Office supplies and ethanol.
- b. *What supplies will be requested from APHIS (list supplies)?*
Traps and lures for moth and beetle traps prior to start of survey as requested by the SSC through the PPQ Survey and Supply database (IPHIS).
- c. *What supplies will be purchased in whole or in part with APHIS funds?*
For outreach: printing supplies/postage for printing and distributing grower information packet. For survey supplies: zip ties, antifreeze, paint filters, wire cutters, rope, throw bags, easy-squeeze wash bottles, shipping materials and boxes, and plastic bags for trap and sample collections.
- d. *How will the supplies be used?*
Supplies will be used to conduct surveys and outreach, conduct initial sorting, and shipping of specimens to identifiers for screening and identification.
- e. *What is the proposed method of disposition of the supplies with a cumulative value over \$5,000 upon termination of the agreement/project?*
N/A

7. What procurements will be made in support of the funded project and what is the method of procurement (e.g., lease, purchase)?

Materials are purchased through the approved system of state contract vendors. Purchases are made with a credit card billed directly to the appropriate account at CAES.

8. What are the travel needs for the project?

- a. *Is there any local travel to daily work sites?*
Local travel to survey sites for moth site establishment and trapping will occur biweekly from June through September. Cooperator will provide vehicle for local travel as state allows.
- b. *What extended or overnight travel will be performed (number of trips, their purpose, and approximate dates)?*
No extended or overnight travel is anticipated for this project. Dr. Jason White and Mr. Michael Last approve all travel.

9. Reports:

All Reports will be completed in ezFedGrants. Reports include:

- a. Narrative accomplishment reports in the frequency and time frame specified on the Agreement Award Face Sheet.
- b. Federal Financial Reports, SF-425, in the frequency and time frame specified on the Agreement Award Face Sheet.

10. Are there any other contributing parties who will be working on the project?

- a. *If so, list other participating institutions/agencies who will work on the project.*
N/A
- b. *Describe the nature of their effort.*
N/A

B. APHIS Will:

1. Outline the Agency's (USDA APHIS PPQ) substantial involvement.

- a. *Include any significant Agency collaboration and participation*
- Providing any new information that becomes available on survey pests, provide appropriate forms and review data.
 - Providing the following resources: funds to the Cooperator to cover costs outlined in the financial plan. In addition, specific appropriated funding, in the level authorized by APHIS Field Operations, will be dedicated to the delivery of CAPS objectives listed above.
 - Making arrangements for confirming identification of suspect moth and beetle samples.
- b. *Project oversight and performance management*
The State Plant Health Director, USDA APHIS, will provide information support, review performance, and federal guidance.
- The Pest Survey Specialist, USDA APHIS, will assist in developing CAPS pest survey protocols, pest risk analysis, IPHIS training, work plan and budget development, and other related activities.
- c. *Provide the equipment requested by the cooperator in 4.b. & c.*
- d. *Provide the supplies requested by the cooperator in 6.b. & c.*

IV) GEOGRAPHIC LOCATION OF PROJECT

- A. *Is the project statewide or in specific counties?*
Two Connecticut counties where high risk sites are identified: Fairfield and New Haven.
- B. *What type of terrain will be involved in the project?*
Wholesale and retail nursery land, including growing yards.
- C. *Are there any unusual geographic features which may have an impact on the project?*
None.

V) DATA COLLECTION AND MAINTENANCE

Each State is responsible for entering complete, accurate, and timely pest survey data that was obtained using the Approved Methods for Pest Surveillance. The National Agricultural Pest Information System (NAPIS) is the final repository for all Pest Detection and Cooperative Agricultural Pest Survey (CAPS) survey results. As such, all data generated from all Pest Detection/CAPS surveys will be entered into NAPIS at <https://napis.ceris.purdue.edu>. In addition:

- First record for the State and/or County will be entered within **48 hours** of confirmation of identification by a qualified identifier.
- All other required records, both positive and negative survey data, must be entered **within two weeks** of confirmation.
- All records are to be entered into the NAPIS database no later than the date that the final Accomplishment Report is due, otherwise a justification must be provided in the Accomplishment Report. If results have not been returned from an identifier or diagnostic lab by the time the Accomplishment Report is due, please notify the ADODR and the National Operations Manager for Pest Detection.

All survey data performed by federal personnel in conjunction with this agreement should be properly arranged and formatted for NAPIS data entry and provided to the State Survey Coordinator for entry into NAPIS.

VI) TAXONOMIC SUPPORT

VI- Person(s) or Institution that will perform preliminary identification of samples as defined above.

Preliminary Identification (raw samples)

Scientific Name	Common Name	Diagnostician Name	Title	Affiliation
<i>Hylobius abietis</i>	Large Pine Weevil	Robert Androw	Scientific Preparator	Carnegie Museum of Natural History
<i>Monochamus urussovi</i>	Black Fir Sawyer	Robert Androw	Scientific Preparator	Carnegie Museum of Natural History
<i>Monochamus alternatus</i>	Japanese Pine Sawyer	Robert Androw	Scientific Preparator	Carnegie Museum of Natural History
<i>Tetropium castaneum</i>	Black Spruce Beetle	Robert Androw	Scientific Preparator	Carnegie Museum of Natural History
<i>Tetropium fuscum</i>	Brown Spruce Longhorned Beetle	Robert Androw	Scientific Preparator	Carnegie Museum of Natural History

Diagnostic Details – Type	Diagnostic Details – Notes	Diagnostic Details – Expected # of Samples	Contact Name	Contact Email
Raw samples	Samples will be collected raw by the CAES and sent to Carnegie Museum of Natural History for screening.	420	Dana Crandall	Dana.Crandall@ct.gov

Preliminary Identification (screened samples)

Scientific Name	Common Name	Diagnostician Name	Title	Affiliation
<i>Dendrolimus punctatus</i>	Masson Pine Moth	Richard Worth	Entomologist	Oregon Department of Agriculture
<i>Thaumetopoea pityocampa</i>	Pine Processionary Moth	Richard Worth	Entomologist	Oregon Department of Agriculture

Diagnostic Details – Type	Diagnostic Details – Notes	Diagnostic Details – Expected # of Samples	Contact Name	Contact Email
Screened samples	Will screen out by-catch and only send suspect specimen	420	Dana Crandall	Dana.Crandall@ct.gov

VII) SURVEY SUMMARY FORM

A Survey Summary Form must be completed to summarize all Pest Detection/CAPS surveys **funded by the Pest Detection line item.** If surveys are combined into one work plan, each individual survey still needs to be entered separately into the Survey Summary Form.

VIII) SIGNATURES

Victoria Lynn Smith 29 Aug 2022
ROAR Date ADODR Date

FY2023 CAPS Survey Financial Plan

COOPERATOR NAME: The Connecticut Agricultural Experiment Station

TIME PERIOD (Cooperative Agreement Year): May 1, 2023 – April 30, 2024

ITEM	APHIS FUNDS	COOPERATOR FUNDS (Show even if zero)
PERSONNEL:		
<i>State Survey Coordinator: 600 hrs. @ \$27.07/hr</i>	\$16,242	\$0
<i>Seasonal Worker: 700 hrs. @ \$14.00/hr</i>	\$9,800	\$0
Subtotal	\$26,042	\$0
FRINGE BENEFITS:		
<i>95.23% of salary of Permanent Employees</i>	\$ 15,467	\$0
<i>75.23% of salary of Durational Employees</i>	\$ 7,373	\$0
Subtotal	\$ 22,840	\$0
TRAVEL:		
<i>State Vehicle @ \$400/month for 5 months</i>	\$ 2,000	\$0
Subtotal	\$ 2,000	\$0
EQUIPMENT		
Subtotal	\$0	\$0
SUPPLIES		
<i>Outreach and survey supplies</i>	\$ 3,322	\$0
Subtotal	\$3,322	\$0
CONTRACTUAL		
Subtotal	\$0	\$0
OTHER		
Subtotal	\$0	\$0
TOTAL DIRECT COSTS	\$54,204	\$0
INDIRECT COSTS (36.13% of Salary)	\$9,409	\$0
TOTAL	\$63,613	\$0
Cost Share Information	100%	0%